Assessment of the Principal Earthworks
Federal Fish Hook Line, Petersburg, Virginia
OCTOBER 1998
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Cultural Resources GIS, Washington DC
Maps and report produced by David W. Lowe, June 1998
Field work conducted by David Lowe, Bonnie Burns, James Stein, and Deidre McCarthy
Thanks to everyone at Petersburg National Battlefield
Introduction: EARTHWORKS HUSBANDRY

For several years, resource managers of the National Park Service have been involved in an internal debate to determine the “best” way to preserve and manage military earthworks. Before Andropogon’s *Earthworks Landscape Management Manual* appeared in 1989, little else had been published on the subject. Andropogon’s work represented a first attempt to define the debate and to offer recommendations for preservation and stabilization. The report stated that “Forest and Tall Grass, which provide the greatest level of stabilization and require the least maintenance, should become the most prevalent cover types over time.”¹ The use of high maintenance, non-native grasses (turf grasses) was discouraged. The two types of preferred ground cover—forest and native grasses—are at extremes of the resource management spectrum and dictate vastly different approaches to maintenance and upkeep. This has engendered further discussion over when it is advisable to clear trees and plant grasses or when to leave forest intact.

Our work at the Fish Hook in Petersburg confirms mounting evidence that mature forest cover provides the best protection for the resources. The profile, definition, and clarity of surviving detail found at Fort Welch, the Siege Battery, Fort Fisher, and, to a lesser extent, forts Gregg and Wheaton, are clearly superior to that observed where earthworks have been cleared of trees. This does not imply that all earthworks should be maintained in forest cover, only that the integrity of the resources should be considered before any decision to clear away trees is made. Any abrupt change of land cover will damage the resources. How much damage, or how little, will depend upon many factors, but principally on the impact of the clearing and replanting practices and how long the parapet surface is bared to the elements before a new surface cover is established.

The principal surface cover under forest conditions is leaf litter, which effectively inhibits erosion if left undisturbed. The greatest erosion occurs when all large trees are removed without providing a new parapet cover. Fort Conahey and Fort Urmston are unfortunate examples of earthworks that have suffered erosion as a result of tree removal. With the canopy removed, the leaf litter cover is washed away with the next storm. Erosion sets in, immediately softening the profile, blurring and eventually destroying features, such as gun platforms and embrasures. In extreme cases, one can actually observe segments of the parapet slowly “melting” into the ditch. The erosion ends only when a new cover is established.

Large trees growing on or adjacent to the parapet, however, can uproot and damage the earthwork. Tree throw on the Fish Hook line was not found to be a problem generally, but storm damage could be catastrophic. This suggests that earthworks in mature forest cover cannot simply be left alone as suggested by the manual, but must be actively maintained by selectively removing trees. High-risk trees would be thinned and removed, while low risk trees would be encouraged to maintain enough canopy to shed rainwater and replenish the leaf litter cover. This might be described as a “tree husbandry” approach to maintenance.

Managing Earthworks under Forest Cover (draft) by James Johnson offers some ideas about how to identify high-risk trees. Logically, based on “root zone geography,” trees located

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on the ends of parapets pose the greatest risk, those on top of the parapet are next, and those on the side pose the least threat. From our observations in the field, however, the location of thrown trees appears entirely random. Certain tree species, such as white pine, appear to cause more damage than others when uprooting. More research might determine species and sizes of trees that pose a higher risk, although it may prove that risk factors are related directly to the health of individual trees, which is more difficult to assess over a large area.

Establishing a replacement Tall Grass cover is more problematic. Andropogon suggested invasive methods, such as plugging, staking, or implanting fascines to limit erosion while the new cover “took.” These approaches compromise earthwork integrity and should be rejected except in situations where erosion from other causes is already far advanced. The 1996 revision of the manual, entitled Earthworks Landscape Management Field Handbook (draft), recommends an approach that would establish vegetative cover, particularly tall grasses, on the ditch and parapet by thinning woody growth and encouraging native plants. This echoes Andropogon’s recommendation to establish “dense stands of native grasses, primarily little bluestem, under a light tree canopy” where appropriate. This “plant husbandry” approach suggests mowing and burning to encourage native grasses in a light forest setting. While this approach may be perfectly acceptable for earthworks that already have been cleared and are maintained in some manner, serious problems may be encountered when moving directly from leaf litter cover to vegetation. First, if the acidic leaf litter remains in place, it will smother the growth of desirable grasses, whether the area is mown or not. The protective cover must be removed before grasses will take. Erosion will occur. Second, burning removes 100% of the protective leaf litter, opening the parapet to erosion on a large scale. This could be disastrous with some soil types if a replacement cover for the parapet, such as mulch, is not immediately provided.

The transition from leaf litter cover to live vegetative cover is the most dangerous time of the process. Grasses need to be sown and cultivated, while maintaining a protective surface cover. The only method that would appear to accomplish both of these objectives simultaneously is hydro seeding. Published research on the efficacy of hydro seeding would make a valuable contribution to earthworks management in the national parks.

Both Morrison and Johnson identify three management categories of earthworks: cleared; intermediately managed; and protected (in forest cover). Management practices vary according to the category. A slight revision of these categories would clarify management intent:

1) **Cleared or Display Earthworks**—sites that typically are close to visitor facilities or busy parking areas and that receive many visitors. Without some form of maintained cover and ongoing care, the resource would soon erode beyond recovery. In this case, planting in grass cover is a way to retard the deterioration of the earthwork. At the same time, it opens the area to display and more intensive interpretation, appropriate for a heavily visited site. Seriously degraded earthworks may as well be cleared of trees and sown with grasses, as it may be the best means to salvage remaining integrity. In extreme cases, some reconstruction of display earthworks may be justified—rebuilding revetments, gun platforms, and embrasures. This reconstruction is a form of protection in that it covers the resource completely and prevents further erosion. While such remedial work has some interpretive value, the overall effect is no substitute for the authenticity of a well-preserved and unreconstructed earthwork.

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4 Andropogon, p. D-6
2) **Selectively Interpreted (intermediately managed) Earthworks**—sites that receive moderate, self-guided visitation and that probably are not well patrolled. These earthworks might best be maintained in a mixed cover. Strategic areas would be cleared, planted in grasses, and connected by wood chip trails to guide visitors through the site and away from sensitive areas. The rest of the site would be managed under forest cover to preserve resources, with underbrush serving to limit or discourage access. Over time, features in the cleared areas could be compared to those preserved under forest cover to determine the effect of clearing and visitation upon the resources. Access to these sites might be restricted from time to time to allow vegetation to recover from trampling.

3) **Forested (protected) Earthworks**—sites that currently are well preserved due to “benign neglect,” that receive little visitation, and that would continue in this state with minimal intervention. These sites are set aside for future study and would be maintained under a tree husbandry regime. Forested earthworks would be interpreted, but with guides rather than signage. Guides could conduct small groups of visitors to these sites during winter months when visibility is good and the ground frozen. During summer months, undergrowth would discourage casual visitation.

With the goal of preserving the largest number of earthworks in the best possible condition across all park service holdings, every park with earthworks should attempt to maintain a balance among these three categories. Cleared earthworks are easier to interpret and maintain in areas of high visitation, but every change of land cover exacts some toll on the resources. Forest cover best preserves resource definition and clarity of detail. These details communicate the immediacy and authenticity of the surviving resources. Selective interpretation is a compromise that encourages some visitation, while emphasizing resource protection.

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**GPS Survey in Fort Fisher**

Survey teams from Cultural Resources GIS mapped the earthworks on Petersburg National Battlefield’s Fish Hook line in April 1998. The teams used Trimble Pro-XR and Pro-XL Global Positioning Systems receivers that achieve an accuracy of +/- 1 meter after differential correction for 90% of collected positions. The hand held computer was loaded with a data dictionary that enabled surveyors to enter essential attributes of the earthworks features, while capturing spatial coordinates. The field data were used to create thematic map layers in an ArcInfo GIS (Geographic Information Systems) database. Parapet lines were buffered using the recorded average width to generate a polygon coverage, which is the basis for the site maps and area statistics included in this report. These fort polygons are models and may be subject to revision. Draft maps were field checked in May.
Detail of Sheet 3 (RG77 G204-35) of Michler Map Series Showing Area of the “Fish Hook”
Assessment of the Principal Earthworks
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The “Fish Hook” at Petersburg National Battlefield preserves examples of late war siegeworks that occur nowhere else. During fall 1864 and winter 1865, Federal engineers designed a line of fortifications that could be held by a minimal number of troops and eventually by the garrisons of the enclosed forts alone. Fort Fisher was the keystone of this line, but each redoubt had a role to play in the defense. Guns were sited to create interlocking fields of fire that could systematically sweep all of no-man’s land with shell and canister. Multiple lines of fraise, abatis, and wire entanglements were constructed to slow any attacking force, to give the guns time for execution. It was a lethal design that cannot be understood by studying individual redoubts or trench lines in isolation.

Confederate engineers did not adopt a system of mutually supporting, enclosed forts along this section of their defenses, perhaps for lacking sufficient field artillery. The siege might have been lengthened if they had. As it occurred, the military architecture preserved on the Fish Hook line contributed materially to Federal victory at the Siege of Petersburg.

The Fish Hook line within the boundaries of Petersburg National Battlefield consists of one bastioned fort, five redoubts, and a siege battery—all connected by rifle trenches. This line was entrenched after September 30, 1864, as Federal forces sought to consolidate gains made during the fighting on Peebles and Pegram farms and improved almost continuously until the end of the siege. In general, these earthworks are located in wood lots of various sizes and maturity. The best preserved earthworks are located in the most mature forest conditions, while the least preserved have been cleared of trees in the recent past, then allowed to grow up in woody scrub and pines. The surface cover of the parapets is almost exclusively leaf litter. The park’s boundaries in every case lie close to the earthworks providing little if any buffering from activities on adjacent private property.

In April 1998, Cultural Resources GIS conducted a systematic GPS survey of the principal artillery earthworks on the Fish Hook line—Forts Urmston, Conahey, Fisher, Welch, Gregg, Wheaton, and the Siege Battery. The earthworks were assessed according to 1) clarity of surviving details, 2) amount of damage observed in the field, and 3) integrity of setting. The scores assigned to each earthwork are summarized in the table above and described in more detail in the following discussion. Scoring ranged from 5, being best in the category, to 1, being worst.

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The overall integrity rating is the sum of the three assessment categories and provides a comparative indicator of the earthworks’ condition (10-15 good, 5-9 fair, 1-4 poor). The perfect score (15), for example, might be assigned to an earthwork that remained undisturbed in an area where woods grew up soon after the end of the war and were never extensively logged and where the soils resisted erosion.

The results of the assessment are summarized in the table below and discussed in more detail in following sections.

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<td>4</td>
<td>4</td>
<td>12 good</td>
</tr>
<tr>
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<td>4</td>
<td>4</td>
<td>2</td>
<td>10 good</td>
</tr>
<tr>
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<td>3</td>
<td>2</td>
<td>4</td>
<td>9 fair</td>
</tr>
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<td>3</td>
<td>3</td>
<td>2</td>
<td>8 fair</td>
</tr>
<tr>
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<td>1</td>
<td>1</td>
<td>4 poor</td>
</tr>
<tr>
<td>FORT CONAHEY</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3 poor</td>
</tr>
</tbody>
</table>

During the three-day survey of the Fish Hook line, two CRGIS crews mapped a variety of earthworks and other features:
- artillery platforms, 51
- artillery embrasures, 27
- artillery ramps, 20
- traverses, 7
- balks, 13
- magazines, 7
- miscellaneous holes (primarily foxholes), 17
- banquette (firing step), 181 meters
- park trails, 646 meters
- boundary markers, 32

Crews mapped 33 parapet segments, totaling 3,242 linear meters. The relief of parapets (distance from top of parapet to bottom of ditch) ranged from 0.3 to 4.6 meters, the average being 2.23 meters. Parapet width ranged from 2.13 meters to 7.3 meters, the average being 4.6 meters. The condition of 2,726 meters of parapet was assessed as good, 295 meters as fair, and 221 meters as poor. Ditch-in-front construction was used for 93 percent of these earthworks.
In addition, 105 assessment points were taken, at which the following information was collected: predominant surface cover of the parapet (leaf litter, moss, native grasses, heavy undergrowth, turf grass), percent of bare soil, plant species diversity (within the surrounding square meter), and observed damage (animal burrowing, human digging, tree throw, erosion, compaction, intrusion, or none). Leaf litter was by far the predominant parapet cover and provided greater than 80 percent coverage in most locations. As a result of the poor surface soils and thorough covering of leaf litter, plant species diversity (at least in April) was very low.

The principal earthworks are discussed in the following section in order of integrity—from best to worst condition and recommendations for treatment are offered based on the integrity of resources and setting and observed damage.

**FORT WELCH**

Fort Welch is a small redoubt with steep slopes and well defined angles that is filled with interesting survivals--nine gun positions with platforms and ramps, four embrasures with good definition, a magazine, and segments of surviving banquette (firing step) connecting gun platforms. The redoubt is difficult to access with its steep sides and water-filled ditch and is thus rarely visited. This has contributed to its high rating. Little damage to the interior was observed, although animals are burrowing into the parapet in at least four places, primarily in the northwest face. This infestation might easily worsen and begin doing serious damage to the parapet. The redoubt’s deep, water-filled ditch and steep slope have prevented extensive timbering. The interior is dense with larger pines and hardwoods and heavy undergrowth.

The terrain in the immediate vicinity has remained largely undisturbed and thus retains high integrity. Much of the acreage between the National Park and the boundary of Pamplin Park Civil War Site was clear cut and sown in new pines, making the area nearly inaccessible. Because of the nature of the clear-cutting, it is assumed that surviving picket lines, covering Fort Welch and the Siege Battery were destroyed or badly damaged. Because of its integrity, Fort Welch is an ideal candidate for a forest husbandry approach.

**SIEGE BATTERY (NO. 27)**

The Siege Battery (number 27 in the line of Federal batteries) has benefited from its relative obscurity. It is highly overgrown in summer months, and its features are not readily readable to the casual observer even in the winter. It is a well-preserved example of an artillery position constructed late in the war. The battery has a clean profile with well-defined angles. It is rich in detail with four large traverses, all sharply defined, eight positions for large caliber guns.
which retain their platforms and embrasures, two platforms for field guns, and a probable mortar platform, as well as two magazines constructed behind the parapet in the angles of the traverses. Little damage was noted in the interior, except for a large animal burrowing in the magazine adjacent to gun #8. The rear of the platform of gun #1 was truncated when the hiking trail came through. The Pegram House site, located within a hundred yards or so from the Siege Battery would be an important archeological site and interpretive location.

The Siege Battery should probably be maintained in forest cover. If, however, additional easements could be acquired to allow interpretation of the Pegram house site and Battle of Pegram’s Farm, a selective portion of the battery might be cleared and interpreted. This would be preferable to clearing Fort Welch.

**FORT FISHER**

Fort Fisher is a large bastioned fort with a steeply sloping parapet and fairly well defined angles. Its size has tended over the years to minimize the effect of impacts and intrusions. Despite the fact that a portion of the ditch of the southwest bastion was filled in for road improvements and that some logging has occurred, the earthwork retains high integrity. Once inside, the sense of place is palpable. The interior is rich in legible detail. There are positions for nineteen field guns, two with recessed platforms, four ramps leading to guns in the bastion angles, a large oblique traverse with a collapsed magazine, two smaller traverses in the northeast and northwest bastions, each with a large collapsed magazine, long segments of surviving banquette, particularly in the northeast bastion, and the remnants of the fort’s drainage system. The drainage system is a particularly rare survival. Shallow ditches run from the fort’s two northern bastions, conjoin, and then drain into a sump adjacent to the western face. The ditch of the central traverse drained into this sump, as well. A collapsed portion of the parapet next to the sump might be evidence of a culvert (wooden) that passed water out of the fort into the outer ditch. A similar slumping was observed on the opposite face. Isolated spots of erosion were seen in several places in the parapet. Two compacted areas appear to have been caused by animals, particularly in the northeast bastion near gun #12 where a trail was worn along the outer edge of the parapet. Only one example of tree throw was found, adjacent to the parapet but causing little damage.

When surveyed in April 1998, Fort Fisher received a higher mark for setting, despite its location at the intersection of Church and Flank roads. The terrain to the north and northeast was largely intact. On a follow-up visit in May, it was apparent that new construction on private property adjacent to the park had degraded the setting within the fort’s northern and eastern fields of fire. Trees can be replaced but the contour of the land cannot be rehabilitated in any historically meaningful way.
Fort Fisher is a likely candidate for selective interpretation. It is large enough to enable moderate visitation with low impact, so long as visitation is properly channeled. The logical access point would be through the sally port by means of a drawbridge, rather than through the existing intrusion in the southwest bastion. The drawbridge could be raised at dusk to deter nighttime visitation. As an example, a trail could lead visitors past the central traverse up the gun ramp and onto the platform of a cleared and planted northeast bastion. Railings would be needed to keep visitors off the parapets and the magazines. To view the outside of the fort, visitors would follow a hiking trail around the ditch perimeter. After some years, the effects of visitation could be examined and the relative integrity of features in the northeast and northwest bastions compared. This would provide a valuable case study for determining the long-term efficacy of hydro seeding for resource preservation.

FORT GREGG

Fort Gregg has interesting features that have been blurred by erosion over the years. The design itself—featuring a dentate face—is fairly unique. Each of four gun platforms was sited within a parapet ‘V’ that directed oblique fire to the northwest or southwest. This was one technique used by engineers to coordinate the fire of guns from adjacent redoubts to create interlocking fields of fire. Six gun platforms are visible but outlines are indistinct. Two gun ramps are fairly well defined. The magazine outline has been blurred by erosion.

The setting retains a high amount of integrity, particularly within the redoubt’s fields of fire to the west and southwest. The area is mature woodland. Clear-cutting on private property adjacent to the park, however, would likely degrade the fort’s setting. The ground to the rear of the fort (east) has been more disturbed over the years, probably by agriculture. Originally, parapets connected Fort Gregg to adjacent earthworks. Faint traces of one segment of these connecting parapets were tentatively identified but not mapped.

Animal burrowing is a severe problem. Foxes or ground hogs have dug at least seven large burrows and appear to have a system of linked tunnels within the parapet. This could lead eventually to a collapse of the parapet from within. Several eroded areas in the southern face may have resulted from old burrows. The animals should be removed, the burrows filled and tamped with an imported soil (to differentiate from original construction), and the scar covered with the excavated spoil and leaf litter. The parapets fronting the west face have experienced past erosion, almost to the level of the gun platforms. A now unused social trail enters the fort at gun #2. There was evidence of recent relic hunting in at least two locations—between guns number 1 and 2 and in the outside of the north face.
Although Fort Gregg is farthest removed from a public access point, it has been visited heavily over the years, probably by local children and more recently by relic hunters. Logging occurred, perhaps in the 1960s, but was not heavy-handed. The redoubt retains a strong sense of place, but its small size tends to magnify the negative effects of damage. After repairs, Fort Welch should be maintained by forest husbandry techniques.

**FORT WHEATON**

This redoubt was built by Confederates as Fort Archer, captured by Griffin’s division of the V Corps on September 30, 1864, then refaced and renamed Fort Wheaton. The earthwork has experienced an overall softening of angles due to past erosion. There has been a great deal of casual visitation over the years, though little currently. The redoubt’s basic features remain intact, but it is encroached upon from all sides. The park boundary follows the outer perimeter of the ditch. The neighboring landowner recently clear-cut right up to the park boundary, perhaps even burying or uprooting one of the property markers. Heavy equipment ruts come up to the edge of the redoubt’s ditch at one or two places and may have caused some slumping of the counterscarp. The area has been sown in new pines that have grown into an impenetrable thicket. While the sense of place within the redoubt is strong, from without the viewer feels cramped and disoriented. The ground adjacent to gun platform #3 was disturbed by past logging or human digging. The original sally port of Fort Archer (filled in when the redoubt changed hands) has eroded out, though erosion does not appear ongoing. The surrounding landscape has not been recontoured; meaning that some integrity of setting could be reclaimed.

As the last intact Confederate fort on the Squirrel Level Road Line, Fort Wheaton has high interpretive value. It was captured by Federals in the fighting at Peebles Farm and refaced. The fort could be instrumental in telling the story of that battle. Its location, however, precludes interpretation unless additional land or easements could be acquired. This redoubt would be maintained by forest husbandry.

**FORT URMSTON**

Fort Urmston contains four gun platforms, two of which are very clear, and four gun ramps, three of which are in decent condition. The site was cleared within the last twenty years in a manner that was insensitive to surviving features, and the parapet has suffered serious erosion. Angles are blurred, and earth from the parapet has slumped into the water-filled ditch at several points. Undergrowth is heavy. The southern face was destroyed at some point by road construction, taking most of two gun platforms and ramps with it. Two old social trails cross the ditch and enter the redoubt at guns 3 and 5, causing severe compaction and subsequent erosion.

*Federal Fish Hook Line, Petersburg*
A shallow ditch (drainage or relic hunting) was dug at some point behind gun ramps 2 and 3, and much of the spoil was thrown onto gun ramp #3. Tree throw has damaged the parapet in one place in the north face. The setting appears to have been at least moderately degraded for years. There is evidence of ground disturbance, probably due to logging, in the fields of fire to the north. Erosion has advanced to the point, that Fort Urmston would benefit from clearing and planting in grasses. Architectural details will not be compromised.

**FORT CONAHEY**

Fort Conahey was a bilevel redoubt built out from the slope of the hill, rather than on its crest. Four guns were sited in the lower (western) tier to fire through gun ports pierced all the way through the parapet then roofed over with logs and earth. The lower tier gun positions can only be described as “casemated,” a technique used in permanent masonry fortifications but rarely seen in the field. In this case, ad hoc materials were substituted for masonry to completely enclose the guns. The second story collapsed onto itself many years ago, burying many of these original features. Two gun platforms in the east face are better defined. At some point, the western portion of the ditch was filled in by work on Flank Drive.

The site was cleared of trees in the recent past and then allowed to grow up in pines and woody scrub. This tree clearing set off serious erosion, compounded by visitation that has removed the cover of leaf litter and compacted the earth on the northern face. Because large segments of the parapet are showing greater than 40% bare earth, erosion would appear ongoing. Two gun platforms in the dentate north face are visible but poorly defined. There was evidence of recent relic hunting activity (at least three large holes).

The setting of the redoubt has been seriously degraded by new construction adjacent to the park, which has completely reshaped the terrain, removing all historic integrity right up to the park boundary. Flank Road encroaches from the rear. This unique redoubt appears to have suffered unnecessarily from tree clearing without the appropriate follow up. In its current condition, it would be best to clear Fort Conahey again and hydro-seed it as soon as possible.
## Summary Statistics from GPS Field Survey

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<th>Average relief of earthwork (meters)</th>
<th>Average width of parapet (meters)</th>
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<th>Area within parapet</th>
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<td>0.3</td>
<td>0.24</td>
<td>0.3</td>
</tr>
<tr>
<td>GREGG</td>
<td>0.6</td>
<td>0.2</td>
<td>0.22</td>
<td>0.2</td>
</tr>
<tr>
<td>WHEATON</td>
<td>0.9</td>
<td>0.3</td>
<td>0.27</td>
<td>0.35</td>
</tr>
</tbody>
</table>

### Connecting Rifle Trenches—Parapet length, relief, and width in meters

<table>
<thead>
<tr>
<th></th>
<th>Length of parapet surviving (meters)</th>
<th>Average relief of earthwork (meters)</th>
<th>Average width of parapet (meters)</th>
<th>Overall integrity</th>
</tr>
</thead>
<tbody>
<tr>
<td>URMSTON TO CONAHEY</td>
<td>480</td>
<td>1.34</td>
<td>2.98</td>
<td>Fair</td>
</tr>
<tr>
<td>CONAHEY TO FISHER</td>
<td>387</td>
<td>1.13</td>
<td>3.11</td>
<td>Fair</td>
</tr>
<tr>
<td>FISHER TO WELCH</td>
<td>397(^7)</td>
<td>1.83</td>
<td>5.10</td>
<td>Good</td>
</tr>
<tr>
<td>WELCH TO GREGG</td>
<td>318</td>
<td>1.16</td>
<td>3.87</td>
<td>Fair</td>
</tr>
<tr>
<td>WHEATON</td>
<td>122</td>
<td>1.22</td>
<td>3.65</td>
<td>Good</td>
</tr>
<tr>
<td>Sum/average</td>
<td>1,836</td>
<td>1.25</td>
<td>3.54</td>
<td>Good</td>
</tr>
</tbody>
</table>

\(^5\) Seems low. Part of the ditch has been filled in but model may need adjustment
\(^6\) Does not subtract area of central traverse and ditch
\(^7\) In addition to 132 meters of Siege Battery

*Federal Fish Hook Line, Petersburg*
Damage Observed on Fish Hook Line April 1998

Federal Fish Hook Line, Petersburg
Petersburg National Battlefield
FORT URMSTON April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC

Federal Fish Hook Line, Petersburg
FORT URMSTON

Description: Fort Urmston was a six-sided redoubt with three short faces (21 meters) and three long faces (35 meters); positions for six field guns en barbette in the angles with ramps and platforms; original length of parapet about 168 meters, surviving parapet length 112 meters, average relief 3.0 meters, average width 6.4 meters; original outer ditch perimeter about 205 meters, enclosing 2,985 square meters; prescribed garrison 200.

History: built October 5-12, 1864, by 3rd Battery Vermont Light Artillery; named for 1st Lt. Thomas D. Urmston, 12th United States Infantry, killed at Peebles Farm; occupied by four light 12-pounders, two 3-inch rifles; garrisoned at various times by detachments Gibbon’s Division, II Corps, Second Division, VI Corps, and 61st Pennsylvania Infantry.

Situation: located in stand of mixed woods, several large (12” DBH) pines, numerous smaller pines, gum, ash, heavy undergrowth; location adjacent to Flank Road and across road from church has generated foot traffic over the years.

Condition: generally in poor condition; about 432 square meters (17%) of redoubt destroyed by road widening, including southern face, ditch, and gun platforms 1 and 6; center of fort greatly disturbed by logging, gun platform 3 disturbed, evidence of old digging and backfill onto gun ramp 3, social trails entering at guns 3 and 5, compaction, erosion.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left of gorge</td>
<td>Presumed barbette</td>
<td>218</td>
<td>Destroyed</td>
<td>Shown on plan</td>
</tr>
<tr>
<td>2</td>
<td>West angle</td>
<td>Barbette</td>
<td>290</td>
<td>Platform 13x11 ft</td>
<td>Good angles</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ramp 10x9</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Northwest angle</td>
<td>Barbette</td>
<td>335</td>
<td>Platform 14x14</td>
<td>Disturbed,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ramp blurred 11x15</td>
<td>compacted</td>
</tr>
<tr>
<td>4</td>
<td>Northeast angle</td>
<td>Barbette</td>
<td>12</td>
<td>Platform 14x14</td>
<td>Decent condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ramp 13x17</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>East angle</td>
<td>Barbette</td>
<td>70</td>
<td>Platform 19x15</td>
<td>Eroded,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ramp 13x17</td>
<td>Compacted</td>
</tr>
<tr>
<td>6</td>
<td>Right of gorge</td>
<td>Presumed barbette</td>
<td>140</td>
<td>Destroyed</td>
<td>Shown on plan</td>
</tr>
</tbody>
</table>

Federal Fish Hook Line, Petersburg
Land cleared and graded for new construction north of this line.
FORT CONAHEY

Description: Fort Conahey is an ovoid redoubt of bi-level construction with a dentate front and positions for 11 field guns—3 mounted en barbette, 4 through embrasures (according to the plan though no embrasures were observed), 4 mounted in enclosed casemates on lower level; length of parapet 132 meters, average relief 2.6 meters, average width 5.8 meters; outer ditch perimeter originally 194 meters, enclosing 2,436 square meters (0.6 acres); prescribed garrison 75 men.

History: built October 3-26, 1864, and named for 2nd Lt. John Conahey, 118th Pennsylvania Infantry, killed at Peebles Farm; occupied by two 3-inch rifles and two light 12-pounders, Battery C 1st New York Artillery; garrisoned at various times by detachments of 184th Pennsylvania Infantry, Vermont Infantry, 75 men from Second Division, VI Corps.

Situation: adjacent to Flank Road and parking area, receives steady visitation; was cleared of trees and is now overgrown with woody scrub and pines; parapet cover is leaf litter but two-thirds show more than 40% bare earth; new construction on adjacent property to north has drastically altered terrain contours up to park boundary.

Condition: generally in poor condition, details blurred and obscured, heavy trampling and resultant erosion at guns 7 and 8, evidence of recent relic-hunting activity; tree clearing in recent past left parapet without suitable surface cover causing considerable overall erosion (which appears ongoing); casemated guns and magazine buried by collapse of upper level.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Visible Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left of sally port</td>
<td>Unknown</td>
<td>Not built</td>
<td>None observed</td>
<td>Shown on plan</td>
</tr>
<tr>
<td>2</td>
<td>South face</td>
<td>Casemate</td>
<td>182</td>
<td>None observed</td>
<td>Collapsed</td>
</tr>
<tr>
<td>3</td>
<td>South face</td>
<td>Casemate</td>
<td>224</td>
<td>None observed</td>
<td>Collapsed</td>
</tr>
<tr>
<td>4</td>
<td>West face</td>
<td>Casemate</td>
<td>310</td>
<td>None observed</td>
<td>Collapsed</td>
</tr>
<tr>
<td>5</td>
<td>North face</td>
<td>Casemate</td>
<td>340</td>
<td>None observed</td>
<td>Collapsed</td>
</tr>
<tr>
<td>6</td>
<td>North face</td>
<td>Barbette</td>
<td>355</td>
<td>Platform 16x13 ft</td>
<td>Parapet eroded</td>
</tr>
<tr>
<td>7</td>
<td>North face</td>
<td>Barbette</td>
<td>355</td>
<td>Platform 17x15</td>
<td>Parapet eroded</td>
</tr>
<tr>
<td>8</td>
<td>Northeast face</td>
<td>Unknown</td>
<td>25</td>
<td>None observed</td>
<td>Shown on plan</td>
</tr>
<tr>
<td>9</td>
<td>Northeast face</td>
<td>Unknown</td>
<td>25</td>
<td>None observed</td>
<td>Shown on plan</td>
</tr>
<tr>
<td>10</td>
<td>East face</td>
<td>Barbette</td>
<td>70</td>
<td>Platform 14x15</td>
<td>Outline blurred</td>
</tr>
<tr>
<td>11</td>
<td>Southeast angle</td>
<td>Barbette</td>
<td>160</td>
<td>Platform 14x17 Ramp</td>
<td>Disturbed</td>
</tr>
</tbody>
</table>

Federal Fish Hook Line, Petersburg
FORT FISHER

Description: Fort Fisher is a four-bastioned fort built on a rectangular trace (western face slightly inclined) with positions for 19 field guns, 4 mounted en barbette in the bastion salients, 15 firing through embrasures; length of parapet 582 meters, average relief 4.6 meters, average width 7.3 meters; three magazines—in traverse of northwest bastion, in traverse of northeast bastion, and in central traverse; length of central traverse 54 meters; outer ditch perimeter 675 meters, enclosing 17,228 square meters (4.3 acres); estimated 10,973 cubic meters excavated, requiring 2,058 labor days; prescribed garrison 300 men.

History: Originally constructed October 3-18, 1864, as a small, square redoubt designed for seven guns, named for Lt. Otis Fisher, 8th United States Infantry, killed at Peebles Farm; rebuilt in current configuration January-March 1865; occupied at various times by Battery D Pennsylvania Artillery, 27th New York Battery, Batteries C & I of 5th US Artillery with four light 12-pounders (new fort), 9th New York Artillery (new fort); garrisoned at various times by detachments of 45th Pennsylvania Infantry, 31st Maine Infantry, 26th Michigan Infantry, and 116th Pennsylvania infantry (new fort).

Situation: Intersection of Church and Flank road bordering on new construction on adjacent private property with minimal buffer; in fairly mature woodland with mixture of large pines and hardwoods and many smaller trees, moderate undergrowth; parapet cover is leaf litter.

Condition: Generally in good condition, with well-defined angles, standing water in ditch, southwest bastion breached for access road, ditch filled adjacent to road, compacted game trail on outside of parapet between guns 12 and 13, several areas of isolated erosion or compaction, surviving gun embrasures, platforms and ramps, sections of banquette, drainage ditch and sump.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Visible Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left of sally port</td>
<td>Embrasure</td>
<td>110</td>
<td>Platform 14x12ft</td>
<td>Not on plan</td>
</tr>
<tr>
<td>2</td>
<td>Southwest bastion</td>
<td>Barbette</td>
<td>220</td>
<td>Platform 25x16</td>
<td>Damaged for fort access</td>
</tr>
<tr>
<td>3</td>
<td>Southwest bastion</td>
<td>Embrasure</td>
<td>320</td>
<td>Platform 18x24</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Southwest bastion</td>
<td>Embrasure</td>
<td>320</td>
<td>None observed</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>West face</td>
<td>Embrasure</td>
<td>275</td>
<td>Platform recessed</td>
<td>Outline blurred</td>
</tr>
<tr>
<td>6</td>
<td>West face</td>
<td>Embrasure</td>
<td>275</td>
<td>Platform 16x15</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>West face</td>
<td>Embrasure</td>
<td>260</td>
<td>Platform</td>
<td>Outline blurred</td>
</tr>
<tr>
<td>8</td>
<td>West face</td>
<td>Embrasure</td>
<td>260</td>
<td>Platform 13x17</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Northwest bastion</td>
<td>Embrasure</td>
<td>220</td>
<td>Platform 14x20</td>
<td>Not on plan</td>
</tr>
<tr>
<td>10</td>
<td>Northwest bastion</td>
<td>Embrasure</td>
<td>320</td>
<td>Platform 16x18</td>
<td>In excellent condition</td>
</tr>
<tr>
<td>11</td>
<td>Northwest bastion</td>
<td>Embrasure</td>
<td>290</td>
<td>Platform 16x21</td>
<td>Outline blurred</td>
</tr>
<tr>
<td>12</td>
<td>Northeast bastion</td>
<td>Embrasure</td>
<td>70</td>
<td>Platform</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Northeast bastion</td>
<td>Barbette</td>
<td>45</td>
<td>Platform 22x20</td>
<td>Good condition</td>
</tr>
<tr>
<td>14</td>
<td>Northeast bastion</td>
<td>Embrasure</td>
<td>170</td>
<td>None observed</td>
<td>Not on plan</td>
</tr>
<tr>
<td>15</td>
<td>East face</td>
<td>Embrasure</td>
<td>92</td>
<td>Platform 12x11</td>
<td>Platform recessed</td>
</tr>
<tr>
<td>16</td>
<td>East face</td>
<td>Embrasure</td>
<td>92</td>
<td>None observed</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Southeast bastion</td>
<td>Embrasure</td>
<td>20</td>
<td>None observed</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Southeast bastion</td>
<td>Barbette</td>
<td>140</td>
<td>Platform 26x19</td>
<td>Good condition</td>
</tr>
<tr>
<td>19</td>
<td>Right of sally port</td>
<td>Embrasure</td>
<td>235</td>
<td>Platform 18x22</td>
<td></td>
</tr>
</tbody>
</table>

Federal Fish Hook Line, Petersburg
Description: Siege Battery (No. 27) is an unclosed, traversed battery with three faces of unequal length; platforms for 11 guns—8 siege guns (possibly 20-30 pound parrots) firing through embrasures, 2 field guns mounted en barbette, and 1 mortar (probable); parapet length 132 meters, average relief 2.7 meters, average width 5.5 meters; two magazines adjacent to guns 5 and 8 in angles of traverses.

History: under construction January 21, 1865; proposed name “Battery Abbott” rejected because name was taken elsewhere on the field; number 27 in line of Federal batteries; occupied by one gun of Battery B, 1st New Jersey Artillery; no record that siege guns were emplaced.

Situation: adjacent to hiking trail in mature woodland with heavy undergrowth; parapet surface cover is leaf litter; near site of Pegram House.

Condition: generally in excellent condition with crisp profile, clearly defined gun platforms and embrasures; hiking trail destroyed half of gun platform 1; magazines appear added as afterthought rather than incorporated in original plan; animal burrowing in far left flank and in magazine adjacent to gun 8.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Far left flank</td>
<td>Embrasure</td>
<td>295</td>
<td>Platform blurred</td>
<td>Truncated by road</td>
</tr>
<tr>
<td>2</td>
<td>Northwest face</td>
<td>Embrasure</td>
<td>295</td>
<td>Platform 17x28 ft</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Northwest face</td>
<td>Embrasure</td>
<td>295</td>
<td>Traverse 9x18</td>
<td>Distinct</td>
</tr>
<tr>
<td>4</td>
<td>Northwest face</td>
<td>Embrasure</td>
<td>295</td>
<td>Platform 18x28</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Northwest angle</td>
<td>Probable Mortar</td>
<td>310</td>
<td>Platform 21x14 Traverse 9x14</td>
<td>Adjacent Magazine #1</td>
</tr>
<tr>
<td>6</td>
<td>North face</td>
<td>Embrasure</td>
<td>340</td>
<td>Platform 16x28</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>North face</td>
<td>Embrasure</td>
<td>340</td>
<td>Traverse 9x15</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>North face</td>
<td>Embrasure</td>
<td>345</td>
<td>Platform 12x20</td>
<td>Adjacent Magazine #2</td>
</tr>
<tr>
<td>9</td>
<td>North face</td>
<td>Embrasure</td>
<td>345</td>
<td>Platform 12x20</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Northeast face</td>
<td>Embrasure</td>
<td>40</td>
<td>Platform 13x18</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Northeast face</td>
<td>Barbette</td>
<td>40</td>
<td>Platform 13x18</td>
<td></td>
</tr>
</tbody>
</table>

* Federal Fish Hook Line, Petersburg
FORT WELCH

Description: Fort Welch is a pentagonal redoubt with positions for nine field guns, alternating barbette and embrasure; one magazine is visible between guns 4 and 5; length of parapet 145.5 meters, average relief 3.66 meters, average width 6.4 meters; outer ditch perimeter 221.4 meters, enclosing 3,188 cubic meters (0.8 acres); estimated 1,726 cubic meters excavated, requiring 324 labor days; prescribed garrison 175 men plus artillerists.

History: under construction October 3-10, 1864; named for Col. Norval E. Welch, 16th Michigan Infantry, killed at Peebles’ Farm; occupied by two guns of Battery D, Pennsylvania Light Artillery; later by 11th New York Battery with six 3-inch rifles; garrisoned at various times by detachments of 58th Maine Infantry, 51st New York Infantry, 17th Maine Infantry, and 140th Pennsylvania Infantry.

Situation: located in fairly mature woodland; a few large and many smaller trees within fort, dense undergrowth; parapet cover is leaf litter, park boundary comes very close to ditch.

Condition: generally in excellent condition, parapet damaged by animal burrowing; water-filled ditch; surviving embrasures, gun platforms, ramps, sections of banquette, most nicely defined.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left of sally port</td>
<td>Barbette</td>
<td>170</td>
<td>Platform 19x21 ft  Ramp 20x13  Ramp 11x18</td>
<td>Good condition</td>
</tr>
<tr>
<td>2</td>
<td>Southwest face</td>
<td>Embrasure</td>
<td>220</td>
<td>Ramp 11x9 Traverse Platform 20x18 Ramp 10x11</td>
<td>Good condition</td>
</tr>
<tr>
<td>3</td>
<td>Southwest angle</td>
<td>Barbette</td>
<td>245</td>
<td>Platform 20x21 Ramp 10x11</td>
<td>Well defined</td>
</tr>
<tr>
<td>4</td>
<td>West face</td>
<td>Embrasure</td>
<td>285</td>
<td>Platform 14x18 Ramp 10x11</td>
<td>Good condition Adjacent to magazine</td>
</tr>
<tr>
<td>5</td>
<td>Northwest angle</td>
<td>Barbette</td>
<td>310</td>
<td>Platform 18x21 Ramp 12x21 Ramp 11x14</td>
<td>Very well defined</td>
</tr>
<tr>
<td>6</td>
<td>Northwest face</td>
<td>Embrasure</td>
<td>340</td>
<td>Platform 16x17 Ramp 11x14</td>
<td>Less defined</td>
</tr>
<tr>
<td>7</td>
<td>North angle</td>
<td>Barbette</td>
<td>20</td>
<td>Platform 21x21 Ramp 9x24</td>
<td>Good condition</td>
</tr>
<tr>
<td>8</td>
<td>Northeast face</td>
<td>Embrasure</td>
<td>70</td>
<td>Platform 11x11</td>
<td>Disturbed</td>
</tr>
<tr>
<td>9</td>
<td>East angle</td>
<td>Barbette</td>
<td>87</td>
<td>Platform 16x20 Ramp 8x16</td>
<td>Slightly disturbed</td>
</tr>
</tbody>
</table>

Federal Fish Hook Line, Petersburg 23
**Description:** Fort Gregg is a six-sided redoubt with a dentate front; positions for six field guns all mounted *en barbette*; one magazine behind the north face adjacent to gun 6; length of parapet 133 meters, average relief 3.7 meters, average width 6.7 meters; outer ditch perimeter 203 meters, enclosing 2,558 square meters (0.5 acre); 1,667 cubic meters excavated, requiring an estimated 312 labor-days; prescribed garrison 75 men plus artillerists.

**History:** under construction October 3-27, 1864; named for Lt. James P. Gregg, 45th Pennsylvania Infantry, killed at Pegram’s Farm; occupied by two guns 7th Maine Battery, later by four 3-inch rifles Battery M 1st New Hampshire Artillery; garrisoned at various times by detachments of 8th Maine Infantry, 51st Pennsylvania Infantry, and 148th Pennsylvania.

**Situation:** located in fairly mature woodland; a few larger trees within fort, moderate undergrowth; parapet cover is leaf litter.

**Condition:** generally in fair condition, severe damage to parapet by animal burrowing, evidence of recent relic hunting, some compaction from visitors but not in recent years.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth Of Fire</th>
<th>Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Southeast angle</td>
<td>Embrasure</td>
<td>165</td>
<td>Platform 16x17 ft, Ramp 12x15 ft, Traverse 11x13 ft</td>
<td>Guns 1 and 2 share a ramp</td>
</tr>
<tr>
<td>2</td>
<td>Southwest angle</td>
<td>Barbette</td>
<td>242</td>
<td>Platform 17x17 ft</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>West face</td>
<td>Barbette</td>
<td>255</td>
<td>Platform 21x16 ft</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>West face</td>
<td>Barbette</td>
<td>272</td>
<td>Platform 20x15 ft</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>West face</td>
<td>Barbette</td>
<td>294</td>
<td>Platform 22x16 ft</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Northeast angle</td>
<td>Barbette</td>
<td>55</td>
<td>Platform 22x16 ft, Ramp 9x21 ft</td>
<td>Adjacent to magazine</td>
</tr>
</tbody>
</table>

*Federal Fish Hook Line, Petersburg*
FORT WHEATON

Description: six-sided redoubt with faces of equal length (27 meters); positions for six field guns mounted en barbette in the angles; no magazine; length of parapet 148 meters, average relief 3.0 meters, average width 7.3 meters; outer ditch perimeter 221 meters, enclosing 3,609 square meters (0.9 acre); estimated 1,103 cubic meters excavated, requiring 207 labor days; prescribed garrison not stated.

History: originally constructed August 1864 as Confederate Fort Archer, captured September 30, 1864, in an incomplete state and renamed for Capt. J. H. Wheaton, 1st Michigan Infantry, killed at Peebles Farm; old sally port blockaded and new one pierced through opposite face; served as secondary line for Federals.

Situation: park boundary follows outer edge of ditch; logged right up to property line and adjacent property seeded with pines; good over story, a few large and many smaller trees inside fort; moderate undergrowth; parapet cover is leaf litter.

Condition: generally in fair condition, some blurring of angles and edges due to past erosion (not visibly active); area adjacent to gun 3 disturbed, old sally port eroded out, some compaction from visitation, though not recent.

<table>
<thead>
<tr>
<th>Gun Position</th>
<th>Location</th>
<th>Type</th>
<th>Azimuth</th>
<th>Features</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left of sally port</td>
<td>Barbette</td>
<td>185</td>
<td>Platform 16x12</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Southwest angle</td>
<td>Barbette</td>
<td>240</td>
<td>Platform 19x17</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Northwest angle</td>
<td>Barbette</td>
<td>300</td>
<td>Platform 20x19</td>
<td>Eroded</td>
</tr>
<tr>
<td>4</td>
<td>North angle</td>
<td>Barbette</td>
<td>4</td>
<td>Platform 22x20</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Northeast angle</td>
<td>Barbette</td>
<td>62</td>
<td>Platform 19x14</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Southeast angle</td>
<td>Barbette</td>
<td>120</td>
<td>Platform 16x15</td>
<td>Poor condition</td>
</tr>
</tbody>
</table>
Land cleared and graded for new construction north of this line.
Land cleared and graded for new construction north of this line.

Petersburg National Battlefield
CURTAIN WALL
URMSTON TO CONAHEY
April 1998

National Park Service
Cultural Resources GIS Facility, Washington DC

Federal Fish Hook Line, Petersburg
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul 30, 1864</td>
<td>Battle of the Crater</td>
</tr>
<tr>
<td>Jul 31</td>
<td>Sites selected for forts Rice, Meikel, Morton, Haskell, Stedman, McGilvery</td>
</tr>
<tr>
<td>Aug 18–26</td>
<td>Offensive against the Weldon Railroad</td>
</tr>
<tr>
<td>Sep 7</td>
<td>Corduroy roads, entanglements, slashings, under construction. Line traced from</td>
</tr>
<tr>
<td>Sep 17</td>
<td>Length of main line over 16 miles, consisting of 19 forts and redoubts, 41</td>
</tr>
<tr>
<td>Sep 26</td>
<td>Military railroad completed to Globe Tavern, approved for service</td>
</tr>
<tr>
<td>Sep 29–Oct 3</td>
<td>Poplar Springs Church Offensive (Peebles and Pegram farms)</td>
</tr>
<tr>
<td>Oct 4</td>
<td>Line selected to connect from near Pegram house in rear of Fort Dushane</td>
</tr>
<tr>
<td>Oct 8</td>
<td>Forts Keene, Urmston, Conahay, Fisher, Welch, Gregg, Cummings, Sampson,</td>
</tr>
<tr>
<td>Oct 24</td>
<td>Two new redoubts thrown up near Avery and Friend houses</td>
</tr>
<tr>
<td>Oct 26–28</td>
<td>First Hatcher’s Run Offensive (Boydtown Plank Road)</td>
</tr>
<tr>
<td>Nov 12</td>
<td>Rear line from Blackwater Swamp to Bailey’s Creek completed</td>
</tr>
<tr>
<td>Dec 6–7</td>
<td>Aborted Federal movement on Weldon Railroad</td>
</tr>
<tr>
<td>Feb 5–7, 1865</td>
<td>Second Hatcher’s Run Offensive</td>
</tr>
<tr>
<td>Jan–Mar</td>
<td>Earthworks enclosed and strengthened all along the lines to free as</td>
</tr>
</tbody>
</table>

**Federal Fish Hook Line, Petersburg**

31
**Notes on Construction and Occupation of the Fish Hook” Line**

**Fort Wheaton**  
Previously Confederate Fort Archer. Captured by Griffin’s division V Corps, September 30, 1864, and reversed.8

**Fort Urmston**  
October 5-12: Built by 3rd Battery, VT Light Artillery.9  
October 26: Four light 12-pounders, two 3-inch rifles.10  
November: “The command has been in the breastworks during the month near Fort Urmston both at the right and left of Squirrel Level road, doing picket duty and perfecting the troops in drill and discipline.”11  
December 7: Gibbon’s Division of II Corps assigned 250 enlisted men to Fort Urmston.12  
February 5: Garrisoned by 200 men of Second Division of VI Corps13  
April 2: garrisoned by a detachment of 61st PA Infantry14

**Fort Conahey**  
October 26: two 3-inch rifles, 2 light 12-pounders15  
November 8: Detail of 100 men at work on the fort.16  
November 18: Fort Conahey completed under the direction of Lt. Howell and Lt. Phillips with the assistance of Lt. Benyaurd.17  
December 6: Garrisoned by 75 men of 184th PA Infantry.18  
Battery C, 1st NY Artillery19  
January 2: “The corps artillery, consisting at this time of seven batteries, is at present distributed along the line of intrenchments, thirty-six guns being posted in the front line from Battery 24 to Fort Conahey, and one section of two guns in Fort Davison in the rear line, leaving nothing in the shape of artillery as a reserve.”20  
January 4: “The abatis in front of the Fifth and Sixth Vermont, to the left of Fort Conahey, has been covered with brush and other rubbish, making it of not account.”21  
February 5: garrisoned by 75 men of Second Division, VI Corps22

**Fort Fisher**  
The original Fort Fisher was a small redoubt, designed by Lt. C. W. Howell, US Engineers, for seven guns.23 According to the profile on the plan, the parapet of the work was about 14 feet wide. The ditch was six feet deep below grade, while the total relief of the redoubt was about 12 feet.

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9 Dyers Compendium, Pt. 3, p. 1649  
10 Correspondence of C. W. Wainwright, *O.R., Armies* Serial 89, p. 364  
11 Itinerary of First Brigade, First Division, V Corps, *O.R., Armies* Serial 87, p. 58  
12 Circular, *O.R., Armies* Serial 89, p. 85  
15 Correspondence of C. S. Wainwright, *O.R., Armies* Serial 89, p. 364  
16 Correspondence of G. K. Warren, *O.R., Armies* Serial 89, p. 563  
19 Itinerary of Artillery Brigade, *O.R., Armies* Serial 87, p. 67  
20 Correspondence of H. G. Wright, *O.R., Armies* Serial 96, p. 14  
21 Correspondence of C. W. Howell, *O.R., Armies* Serial 89, p. 31  
22 Correspondence of C. H. Whittelsey, *O.R., Armies* Serial 96, p. 406  
23 Site Plan of “Seige [sic] of Petersburg, Fort Fisher, September and October 1864.” National Archives
October 4: a section of Battery D, Pennsylvania Volunteer Artillery occupied Fort Fisher.  
October 18: 27th New York Battery occupied the redoubt.  
October 25: infantry garrison from IX Corps was assigned—45th PA Infantry, 31st ME Infantry (2nd Division, IX Corps) with Col. E. L. Getchell commanding.  
November 16: Lt. Kenyon and a company of pioneers placed a wire entanglement that extended from the front of Fort Fisher to Fort Welch. “This entanglement was commenced on the right of Fort Fisher and extended along the whole front, to a point about 200 yard to the left of Fort Welch and was completed on the afternoon of the 17th instant.”  
November 30: Prescribed garrison of 150 men.  
December 3: 150 men of the 26th MI Infantry (II Corps), Major N. Church commanding.  
December 5: Soldiers constructing winter quarters. Engineers report, “I would respectfully call attention to the building of log huts near the fortifications, particularly along the front line at Forts Wadsworth, Keene, Urmston, Conahey, and Fisher, and recommend that orders be given to burn them as soon as an attack is apprehended, or in case it should become necessary to hold the line by the forts alone.”  
December 6: Second Division of II Corps, relieved Griffin’s Division, V Corps, at daylight, occupying the line from Fort Fisher to Fort Keene.  
December 7: Gibbon’s Division, II Corps, occupied the line with 900 men from the “left of Wheaton to the right of Fort Fisher.” Miles’ Division, II Corps, picketed from Fort Fisher to Fort Cummings with 1,550 men. 4,600 men held six miles of line from Wadsworth to Cummings.  
December 7: prescribed garrison 150 men.  
January 21: Captain Howell superintended the reconstruction of Fort Fisher.  
January 22: Batteries C & I 5th US Artillery with four light 12 pounders  
January 29: Batteries C & I 5th US Artillery with four light 12 pounders  
February 1: “I find from report of one of my aides that the new Fort Fisher is in such condition that it completely obstructs the fire of old Fort Fisher, and is not ready for any guns and will not be ready for more than one gun by night: this, notwithstanding my caution to Major Williams to conduct the work in such a manner that it should not be an obstruction to the defense at that point, but that at least a part of the guns in the old work might be transferred to the front and left flank of the new as soon as their fire began to be obscured.” Infantry garrison increased to 300 privates, assigned from Miles’ First Division II Corps—116th PA infantry.  
February 2: “Two guns of Batteries C and I, Fifth U.S. Artillery, have been moved out of old Fort Fisher and forwarded into the nearly completed bastions of the new work.”  
February 8: “The number of men required to relieve the picket line between Fort Fisher and Fort Gregg is 500.”  
February 8: Batteries C & I 5th US Artillery with four light 12 pounders  

Federal Fish Hook Line, Petersburg 33
February 9: VI Corps relieved division of II Corps on the line from Fort Fisher to Fort Gregg.30 March 13: “Brevet Captain Van Rensselaer, in charge of Fort Fisher, has completed two traverses in that work, each sixty feet in length and each containing a magazine eighteen feet long, a third traverse, to protect the guns in the western curtain, is one-third finished. The entire parapet has been redressed, on account of the damage caused by the heavy rains.”31 March 25: 2nd Brigade, 1st Division, VI Corps, massed in front of Fort Fisher and took the Confederate picket line. “…rallied and withdrew to a crest about 300 yards beyond the enemy’s old picket line, connecting on either flank with the brigades above mentioned. Constructed pits for protection of pickets, detailed 175 men ….”32 Battery of the 9th NY Artillery occupied Fort Fisher during attack on Confederate picket line, March 25.33 April 1: “The divisions, being moved to as near the picket-line as practicable, will advance promptly at 4 a.m., on the firing of a gun from Fort Fisher. The entire picket line will be advanced at the same time, and that part of it on the right of the attacking columns will gain any point in the enemy’s works that it may be practicable for it to carry…. The garrisons of the works from Fort Howard to Fort Urmston, reduced to the minimum will be maintained, as well as those of Forts Gregg, Sampson, and Cummings, and also the one-tenth of the forced in the rifle-pits connecting the works named, the line between Forts Urmston and Gregg being abandoned.”34 April 2: “The men armed with the telescope and globe rifles were ordered to remain in Fort Fisher.”35

Siege Battery
January 21: Battery under construction.36 January 26: Humphreys requested it be called “Battery Abbott” but the name was already taken.37 February 3: One gun, Battery B, 1st NJ Artillery taken from reserve and placed en barbette in the new battery near Fort Welch.38

Fort Welch
October 3: “I sent Captain Hine during the night with two companies to the Pegram house to build a pentagonal fort for nine guns, five in barbette and four in embrasure.”39 October 10: Occupied by two guns of Battery D, PA Light Artillery. October 25: 58th MA Infantry, 51st New York Infantry, and the 17th ME Infantry (2nd Division, IX Corps) were assigned to Fort Welch.40 October 26-29: Engineer troops occupied the line near Fort Welch.41 November 5: Occupied by guns of 7th ME Battery after October 5, until at least November 5.42 November 30: Prescribed garrison, 175 men.43 December 3: 175 men of 140th PA Infantry (II Corps). December 7: Prescribed garrison, 175 men.44 December 8: 11th NY Battery relieved the 10th MA Battery.45

40 Correspondence of Geo. W. Getty, O.R., Armies Serial 96, p. 502
41 Report of N. Michler, O.R., Armies Serial 95, p. 162
42 Report of Jo. E. Hamblin, O.R., Armies Serial 95, p. 300
43 Report of Jas. W. Snyder, O.R., Armies Serial 95, p. 311
44 Report of Horatio G. Wright, O.R., Armies Serial 95, p. 902
46 Special Orders No. 21, O.R., Armies Serial 96, p. 193
47 Correspondence of A. A. Humphreys, O.R., Armies Serial 96, p. 268
48 Correspondence of A. A. Humphreys, O.R., Armies Serial 96, p. 362
50 Special Orders No. 211, O.R. Armies Serial 89, p. 350; Orders, O.R., Armies Serial 89, p. 351
51 Report of N. Michler, O.R., Armies Serial 87, p. 175
52 Report of Adelbert B. Twitchell, O.R., Armies Serial 87, p. 600
53 Correspondence of Sept. Carncross, O.R., Armies, Serial 89, p. 754
54 Correspondence of A. A. Humphreys, O.R., Armies, Serial 89, p. 850
55 Special Orders No. 206, O.R., Armies, Serial 89, p. 879

Federal Fish Hook Line, Petersburg 34
December 9: section of Clark’s 1st NJ Artillery added to six-gun armament of Welch.  
January 9: 11th NY Battery with six 3-inch rifles
January 22: 11th NY Battery with six 3-inch rifles
January 22: 11th NY Battery with six 3-inch rifles
February 8: 11th NY Battery with six 3-inch rifles
March 5: 12th NY Battery with two light 12 pounders
March 12: 12th NY Battery with two light 12 pounders
March 25: two officers, 100 men left at Fort Welch when the rest of the division advanced
March 28: “I shall take two of my guns from Fort Welch, leaving four in it belonging to Sixth Corps.”
April 2: Fort Welch about the center of 2nd Brigade, 3rd Division VI Corps, when drawn up for the assault on the Boisseau Farm. Line extended from Gregg to Fisher.

**Fort Gregg**

October 23–24: occupied by a section of guns of the 7th ME Battery from on or about

October 25: 8th MI Infantry and new recruits of the 51st PA Infantry, commanded by Lt. Col. Ralph Ely, were assigned as garrison. Garrison troops were ordered to encamp in the immediate vicinity of their redoubts and to picket their entire front.

November 30: Prescribed garrison 75 men

December 7: Prescribed garrison 75 men


January 9: Battery M, 1st NH Artillery, four 3-inch guns

January 22: Battery M, 1st NH Artillery with four 3-inch rifles

January 29: Battery M, 1st NH Artillery with four 3-inch rifles

February 8: Battery M, 1st NH Artillery with four 3-inch rifles

March 5: Battery M, 1st NH Artillery with four 3-inch rifles

March 12: Battery M, 1st NH Artillery with four 3-inch rifles

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56 Correspondence of A. A. Humphreys, *O.R., Armies*, Serial 89, p. 909
63 Report of Thomas McKinnie, *O.R., Armies* Serial 95, p. 314
64 Correspondence of JNO G. Hazard, *O.R., Armies* Serial 97, p. 228
67 Special Orders No. 211, *O.R., Armies* Serial 89, p. 350
68 Correspondence of Sept. Carncross, *O.R., Armies* Serial 89, p. 754
69 Correspondence of A. A. Humphreys, *O.R., Armies* Serial 89, p. 754
70 Report of JNO. G. Hazard, *O.R., Armies* Serial 96, p. 77
Note on Historic Map Sources

In June 1865, Maj. Nathaniel Michler assumed responsibility for completing military surveys of Petersburg and Richmond that were begun by engineers of the Armies of the Potomac and James during the last year of the war. Michler had served as head of the topographical department of the Army of the Potomac and was directly involved with the production of many of the wartime campaign and battlefield maps used in the postwar surveys. Under his direction a broader survey was initiated in 1866 to map the major battlefields of the eastern theater. Maj. John E. Weyss headed the fieldwork in Virginia for this endeavor, which was concluded in December 1867. Maps from the Michler–Weyss survey were published in 1869 as the Atlas of Military Maps Illustrating the Operations of the Armies of the Potomac & James. Many of these maps were later resized for inclusion in the Atlas to Accompany the Official Records of the Union and Confederate Armies (published in folios 1891–1895).

A set of the original survey maps of the Petersburg area is housed in the National Archives Cartographic Branch, Record Group 77, G204–33 through G204–40. The Fish Hook line appears on G204–35, which is labeled Sheet No. 3 on the original. The maps were drawn at a scale of eight inches to the mile and have been shown to be among the most detailed and accurate maps produced during the war.

The engineering plans for the Federal forts in the FishHook are in the Fortifications Map File at the National Archives among the 340 items stored in Drawer 150. A listing of plans (not comprehensive) may be found under entry 1.151 in National Archives, A Guide to Civil War Maps in the National Archives (Washington, D.C.: National Archives and Records Administration, 1986).

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**Abatis or Abattis (ah-bah-tee’)—**a barricade constructed of small trees, felled, and aligned with branches pointing toward the enemy. Trunks were often secured in a shallow trench, the branches sharpened and interlaced to present a formidable hedge to an attacking force.

**Balk—**a narrow barrier of earth within the ditch of an earthwork that was purposely left undug.

**Barbette or en barbette (ahn bar-bet’)—**placing an artillery piece so that it fires over the top of a parapet as opposed to through a slit in the parapet called an embrasure. Barbette fire allowed the gun more flexibility, up to a 90-degree field of fire, but provided less protection for gunners than embrasures.

**Bastion—an** earthwork configuration with two faces and two flanks, forming three salient angles; typically connected to another bastion by a parapet or curtain wall

**Bastioned fort—an** enclosed earthwork with bastions in the angles to provide fire along the fronts of the connecting curtain walls

**Battery—an** earthwork designed for artillery

**Casemate—an** enclosed and roofed over gun position

**Counterscarp—the** outer slope of the ditch

**Covered way—an** entrenchment in which the ditch serves as a road or pathway while the parapet protects from incoming fire

**Curtain wall—a** parapet connecting bastions or batteries in a line of entrenchments

**Dead ground—a** depression within an earthwork’s field of fire that cannot be seen

**Dentate—**zigzag or toothed appearance

**Ditch—excavation from** which earth or “spoil” is removed to form a parapet. If filled with water, the ditch might be referred to as a moat. All entrenchments consist of a ditch and parapet. The parapet is a mound built up from the excavated earth.

**Ditch-in-front, ditch-in-rear, ditch both sides—three** forms of parapet construction. Ditch-in-front places both the ditch and parapet between the enemy and the earthwork’s defenders. Excavated Earth is thrown towards the rear against a revetment constructed of logs, wicker, stones, sod, or other materials to form a parapet. Ditch-in-front is the strongest form of entrenchment and was favored by engineers when time allowed. Ditch-in-rear is the fastest form of entrenchment. Spoil is thrown to the front, often upon a fill of logs, stones, or other materials, to create a parapet. Because the defender stands in the ditch with the parapet covering his body, only half as much earth needs to be excavated. Ditch-both-sides was used to widen a parapet as defense against artillery fire, to create a covered way behind the parapet, or simply to provide enough protection in areas where there was shallow topsoil.

**Earthworks, earthwork—an** earthen structure built for military purposes

**Embrasure or en embrasure—placing an** artillery piece to fire through a slit made in the parapet. Embrasure fire provided more protection for gunners but restricted a gun’s field of fire to about 45 degrees.

**Enceinte (en-saint’)—area of a** fort or redoubt enclosed by the parapet

**Enfilade—fire to or from** the side or flank
Face—a straight section of parapet making up a larger earthwork that delivers direct or oblique fire to the front

Fascine (fa'-sheen)—saplings tied into long bundles often used in earthworks construction

Field of Fire—area in front of an earthwork that can be covered by weapons

Flank—the side, as in left flank and right flank; also a straight section of parapet making up a larger earthwork that delivers enfilading fire

Fort—generically applied to all enclosed earthworks; technically an earthwork with bastions

Fraise (frez)—a row of pointed logs placed close together and inclined toward the enemy

Gabion—a wicker basket filled with earth often used in earthwork construction

Glacis (glah-see')—the area adjacent to the outer perimeter of the ditch, often graded to deflect incoming rounds up and over the parapet of the earthwork.

Gorge—the rear of an unclosed earthwork; a palisade was often constructed across the gorge to protect the rear

Grade—original ground level; ditch is below grade, parapet above grade

Gun platform—a leveled area, typically rectangular and surfaced with planks or logs to support the weight of a cannon

Gun ramp—a ramp constructed to move an artillery piece onto its gun platform

Magazine—a watertight planked room covered over with earth, built to store ordnance

Palisade—a stockade

Parapet—mound of earth thrown up as a protective barricade, made up of spoil removed from the ditch; often called a breastwork

Picket hole—foxhole

Profile—the cross section of an earthwork

Rampart—an earthen platform constructed to raise the height of a gun platform or a surmounting parapet; rarely seen in late war earthworks.

Redan—an earthwork having two faces that form an angle pointing toward the enemy

Redoubt—an enclosed earthwork, typically without reentering angles

Reentering angle or reentrant—an angle in an earthwork that points away from the enemy

Relief—height from bottom of the ditch to the top of the parapet

Revetment—a framework supporting the interior slope of the parapet, constructed from logs, fence rails, wicker work, sand bags, gabions, sod, stone, or other materials.

Salient angle—an angle in an earthwork that protrudes toward the enemy
Sally port—a gap in a parapet left as an entrance into an enclosed earthwork

Scarp—inner slope of the ditch

Spoil—earth removed from the ditch

Sump—a hole to collect run-off

Trace—the basic outline of an earthwork

Traverse—a segment of parapet built to protect from enfilading fire

Wire entanglement—telegraph wire strung from post to post at shin height to impede the progress of an attacker

Fort Fisher exterior—view toward sally port from southwest bastion
The basic data dictionary for inventorying and assessing earthworks contains ten features—two lines, seven points, and one area. Roads, hiking trails, and structures in the study area are also mapped during the survey to provide reference features at the same scale as the earthworks. One point and two line reference features are attached to the end of this data dictionary as models.

**LINE FEATURE: Parapet**

- **Attribute: GPS# (text)**
- **Attribute: Type of Construction (menu)**
  - Ditch-in-front
  - Ditch-in-rear
  - Ditch-both-sides
  - No ditch visible
- **Attribute: Relief in <units> (numeric)**
- **Attribute: Width <units> (numeric)**
- **Attribute: Condition (menu)**
  - Good
  - Fair
  - Poor
  - Remnant
- **Attribute: Predominant Ground Cover (menu)**
  - Deciduous woods
  - Mixed woods (evergreen & deciduous)
  - Evergreens
  - Scrub (no overstory)
  - Maintained cover
  - Herbaceous
  - Marsh/wetland
  - Other

**LINE FEATURE: Ditch**

- **Attribute: GPS# (text)**
- **Attribute: Depth in <units>(numeric)**
- **Attribute: Width in <units>(numeric)**
- **Attribute: Standing water? (menu)**
  - yes
  - no

**POINT FEATURE: Artillery Position**

- **Attribute: GPS# (text)**
- **Attribute: Type of Feature (menu)**
  - Gun Platform
  - No Visible Platform
  - Lunette
  - Gun Ramp
- **Attribute: Deployment (menu)**
  - Embrasure
  - Barbette
- **Attribute: Width in <units> (numeric)**
- **Attribute: Length in <units> (numeric)**
- **Attribute: Azimuth of Fire <numeric>**
POINT FEATURE: Embrasure
Attribute: GPS#
Attribute: Azimuth of Fire <numeric>

POINT FEATURE: Traverse/Balk
Attribute: GPS# (text)
Attribute: Type of Feature (menu)
  Traverse
  Balk
  Other
Attribute: Width in <units> (numeric)
Attribute: Length in <units> (numeric)
Attribute: Relief in <units> (numeric)

POINT FEATURE: Hole/Mound
Attribute: GPS# (text)
Attribute: Type of Feature (menu)
  Hole
  Mound
  Other
Attribute: Width in <units> (numeric)
Attribute: Length in <units> (numeric)
Attribute: Relief in <units> (numeric)

POINT FEATURE: Break in Parapet
Attribute: Type of Break (menu)
  Engineered
  Drainage
  Intrusion
  Unknown
Attribute: Width in <units> numeric)

POINT FEATURE: Assessment Point
Attribute: Predominant Surface Cover (menu)
  Bare soil
  Leaf litter
  Moss
  Herbaceous
  Woody scrub
  Turf (maintained)
  Spreading exotics
  Other
Attribute: Percent Bare Soil (menu)
  >80% bare
  60-80% bare
  40-60% bare
  20-40% bare
  <20% bare
Attribute: Damage Observed (menu)
  Erosion
  Compaction
  Animal digging
  Human digging
  Tree throw
  Other
  None
POINT FEATURE: Anchor Point
Attribute: Anchor type (menu)
  Begin
  Angle
  Intersect
  End

AREA FEATURE: Earthworks Area
Attribute: GPS# (text)
Attribute: Description (text)

Model Reference Features

POINT FEATURE: Structure
Attribute: GPS# (text)
Attribute: Structure Name (text)
Attribute: Status (menu)
  Standing
  Ruin
  Approximate site

LINE FEATURE: Trail
Attribute: Name (text)
Attribute: Surface (menu)
  Paved
  Gravel
  Wood Chip
  Earth
Attribute: Width in <units> (numeric)

LINE FEATURE: Road
Attribute: Name/Route# (text)
Attribute: Surface (menu)
  Paved
  Gravel
  Earth
  Trace
Attribute: Width in <units> (numeric)